

What is claimed is:

1 1. A test key for validating the position of a word
2 line overlaying a trench capacitor, which is deposited in a
3 scribe line region of a wafer, the test key comprising:
4 a trench capacitor with a buried plate is deposited in
5 the scribe line region;
6 a rectangular word line deposited in the scribe line
7 region, covering a portion of the trench
8 capacitor;
9 a first and second passing word line deposited above
10 the trench capacitor;
11 a first and second doping region respectively deposited
12 between the rectangular word line and the first
13 passing word line, and the rectangular word line
14 and the second passing word line;
15 a first plug coupled to the first doping region;
16 a second plug coupled to the second doping region; and
17 a third plug coupled to the buried plate.

1 2. The test key as claimed in claim 1 further
2 comprising a fourth plug coupled to the rectangular word
3 line.

1 3. The test key as claimed in claim 1, wherein the
2 position of the rectangular word line is validated by
3 measuring a first current between the first and third plug
4 resulting from applying a predetermined voltage difference
5 between the first and third plug, applying a predetermined
6 voltage level on the rectangular word line and floating the

7 second plug, and a second current between the second and
8 third plug resulting from applying the predetermined voltage
9 difference between the second and third plug, applying the
10 predetermined voltage level on the rectangular word line and
11 floating the first plug.

1 4. The test key as claimed in claim 1, wherein widths
2 of the first and second passing word lines are substantially
3 the same, and substantially smaller than a width of the
4 rectangular word line.

1 5. The test key as claimed in claim 1, wherein a
2 width of the rectangular word line is approximately $0.6\mu\text{m}$.

1 6. A method for validating the position of a word
2 line overlaying a trench capacitor, comprising the steps of:
3 providing a wafer having at least one scribe line
4 region and a memory cell region;
5 forming a test key in the scribe line region and a
6 plurality of memory cells in the memory cell
7 region, wherein the test key comprises:
8 a trench capacitor deposited in the scribe line
9 region and has a buried plate;
10 a rectangular word line deposited in the scribe
11 line region and covers a portion of the
12 trench capacitor;
13 a first and second passing word line deposited
14 above the trench capacitor;
15 a first and second doping region respectively
16 deposited between the rectangular word line
17 and the first passing word line, and the

18 rectangular word line and the second passing
19 word line;
20 a first plug coupled to the first doping region;
21 a second plug coupled to the second doping region;
22 and
23 a third plug coupled to the buried plate;
24 measuring a first current between the first and third
25 plug resulting from applying a predetermined
26 voltage difference between the first and third
27 plug, applying a predetermined voltage level on
28 the rectangular word line and floating the second
29 plug, and a second current between the second and
30 third plug resulting from applying the
31 predetermined voltage difference between the
32 second and third plug, applying the predetermined
33 voltage level on the rectangular word line and
34 floating the first plug; and
35 validating the position of the rectangular word line by
36 the measured first and second currents.

1 7. The method as claimed in claim 6, wherein the test
2 key further comprises a fourth plug coupled to the
3 rectangular word line.

1 8. The method as claimed in claim 6 further
2 comprising the step of:
3 validating the position of rectangular word lines in
4 the memory cells by the validation results of the
5 rectangular word lines in the test key.

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1 9. The method as claimed in claim 6, wherein widths
2 of the first and second passing word lines are substantially
3 the same, and substantially smaller than a width of the
4 rectangular word line.

1 10. The method as claimed in claim 6, wherein a width
2 of the rectangular word line is approximately $0.6\mu\text{m}$.